PERITONEAL DIALYSIS (PD) CATHETER (AND EXTENSION SET) – MANAGEMENT OF CONTAMINATION (DECONTAMINATION)

1. Purpose	A guideline and procedure for the safe and timely management of contaminated PD catheter to prevent complications and peritonitis.
2. Risk Rating	Medium
3. National Standards	1 – Clinical Governance 3 – Preventing and Controlling Healthcare Associated Infection 4 – Medication Safety 6 – Communicating for Safety
4. Employees it Applies to	Registered Nurses (RN) trained in peritoneal dialysis Medical Officers (MO) trained in peritoneal dialysis

Contents

5. PROCESS

Definitions

Intraperitoneal (IP) – within or administered through the peritoneum.

PD catheter – a flexible tubing inserted into the peritoneal cavity to facilitate peritoneal dialysis.

Peritoneal dialysis (PD) – a renal replacement therapy utilising the peritoneal membrane for the removal of solutes (through diffusion and convection) and removal of water (through osmosis and ultrafiltration) after the infusion and during the dwell of a sterile PD fluid/solution into the peritoneal cavity through a catheter.

Continuous Ambulatory Peritoneal Dialysis (CAPD) – a peritoneal dialysis involving the manual infusion and drainage of PD fluid/solution into and out of the peritoneal cavity through a catheter at regular intervals throughout the day (4 – 5 times per day every day).

Automated PD – a peritoneal dialysis involving the use of a dialysis machine (cycler) programmed to automatically infuse and drain PD fluid/solution at shorter and more frequent intervals for 6 – 12 hours every day or every night.

After hours – refers to the times that the PD unit is not operating and the PD Clinical Nurse Consultant (CNC) and PD Clinical Nurse Specialists (CNS) are not on duty. PD unit's business hours are Monday to Friday, 0730 – 1600 hours, except on public holidays or during holiday closure.

Contamination – exposure to contaminants or pathogens either by touch or by air. A contaminated PD catheter and extension set can lead to peritonitis.

Decontamination – the process of removing contaminants or pathogens. PD catheter decontamination must be performed immediately to reduce the risk of peritonitis.

5.1 RECOMMENDED PROPHYLACTIC (DECONTAMINATION) ANTIBIOTIC TREATMENT FOR CONTAMINATED PD CATHETER

- Stat intraperitoneal (IP) dose of:
  - Vancomycin 30mg/kg (maximum 2g)
  - Gentamicin 40mg
- Both antibiotics can be combined in 2 Litre PD fluid and dwell for 6 – 8 hours
- Antifungal prophylaxis
  - Oral Nystatin 500 000 units QID for 7 days after Vancomycin dose

5.2 CAUSES OF PD CATHETER OR EXTENSION SET CONTAMINATION

PD catheter contamination can occur at anytime:

- Disconnection of PD catheter extension set from titanium connector
- Exposure of PD catheter tip or extension set (i.e. minicap fell off)
- Disconnection of PD catheter extension set from dialysis lines whilst on dialysis
- Damage to PD catheter and/or PD catheter extension set i.e. cut, split or hole
- Faulty PD catheter extension set
- Connection to a faulty or contaminated dialysis lines
- Unexplained PD catheter or dialysis line leak

5.3 MANAGEMENT PROCESS FOR CONTAMINATED PD CATHETER DURING PD UNIT'S OPERATING HOURS (MONDAY TO FRIDAY, 0730-1600)

1) When the patient contacts the PD unit, advise to:

a) Immediately place the blue clamp on the PD catheter closest to the skin;
b) STOP dialysis and disconnect;
c) Close the white valve on PD catheter extension set and cover with minicap;
d) Present to the PD unit immediately or present to emergency department (ED) if unwell

2) Upon patient's presentation to the unit, PD nurses would:

a) Notify the renal team to review patient and request them to:
   i. Order PD fluid for microscopy, culture and sensitivity (MCS), cell count and cell differential;
   ii. Order IP antibiotics as per above recommendation
b) Change the PD catheter extension set and/or titanium connector as required and as per Renal SGH WPI 093 Peritoneal Dialysis – Changing PD Catheter Extension Set or Renal SGH WPI 094 Peritoneal Dialysis – Changing PD Catheter Titanium Connector And Extension Set
c) Obtain PD fluid specimen for MCS from patient as per PD SGH WPI 145 Peritoneal Dialysis - Fluid Specimen Collection via CAPD Freeline Solo Exchange
d) Administer prophylactic antibiotics via CAPD freeline solo bag as per SGH CLIN443 Peritoneal Dialysis (PD) – Intraperitoneal Additives and Antibiotics and SGH CLIN732 Peritoneal Dialysis (PD) – Intraperitoneal Antibiotics Dosage, Duration, Compatibility And Stability

e) Leave antibiotics dwelling for 6 – 8 hours

f) **If patient becomes unwell during the procedure:** Manage patient as per SGH CLIN730 PD – Managing Unwell Outpatients in the PD Unit

g) **If patient remains well until the procedure is completed but PD fluid culture result revealed white cell count (WCC) greater than 100:** Inform the renal team to review patient and organise hospital admission for inpatient treatment of peritonitis as per SGH CLIN 442 Peritonitis Management and Treatment.

h) **If patient remains well until the procedure is completed and PD fluid culture WCC is less than 100:** Discharge patient with post procedure instruction to dwell intraperitoneal antibiotics for 6 hours before connecting to APD or CAPD to drain out at home;

i) Document procedure in the clinical notes

5.4 AFTER-HOURS MANAGEMENT PROCESS FOR CONTAMINATED PD CATHETER

- After hours is defined as Mon-Fri 1600-0730, weekends Fri 01600 – Mon 0730 and public holiday
- Refer to section 5.1 of SGH BR 238 *PD: After Hours Management of Outpatients for Unplanned PD Procedure (For Long And Short Stay) In 4 South St George Hospital (SGH)*

1) When the patient contacts 4 South, staff must advise the patient to:

a) Stop dialysis and disconnect;

b) Clamp the dialysis line, close the valve and cover the PD catheter with minicap;

c) Present to 4 South immediately. Patients presenting after 2200hrs or after the main hospital entrance door is closed will need to obtain access to 4South via the Emergency Department (ED). Patients need to advise ED Clerical staff of their appointment, security will then be contacted to escort patients to the ward.

2) The In-charge RN must inform the After Hours Senior Nurse Manager, Bed Manager, after-hours RMO and renal consultant–on–call of the expected admission.

3) When the patient presents to 4 South, the in-charge RN must initiate the admission process:

a) Complete the direct admission form

b) Hotline patient through switch and generate front sheet and labels from IPM.

c) Patient will be admitted to the overcensus bed for the duration of the procedure. (Refer to 5.4 (6) and 5.4 (7) if patient deteriorates and requires admission)

4) Once the patient is admitted, notify the afterhours RMO to:

a) Order PD fluid for MCS, cell count and cell differential;

b) Order IP antibiotics as per above recommendation

c) Document admission notes.

5) The In-charge RN must attend to or delegate a PD skilled RN to attend to the decontamination procedure:

a) Attend to a set of full vital signs and document in SAGO chart.

- Another set of vital signs is recommended 2 hours into the procedure and prior to discharge home. All vital signs are to be documented in SAGO chart.
- Any patient whose vital signs are outside the flags, hourly observation is required throughout the procedure

b) Change the PD catheter extension set and/or titanium connector as required and as per Renal SGH WPI 093 Peritoneal Dialysis – Changing PD Catheter Extension Set or Renal SGH WPI 094 Peritoneal Dialysis – Changing PD Catheter Titanium Connector And Extension Set;

c) Obtain PD fluid specimen for MCS from patient as per PD SGH WPI 145 Peritoneal Dialysis - Fluid Specimen Collection via CAPD Freeline Solo Exchange;

d) Administer prophylactic antibiotics via CAPD freeline solo bag as per SGH BR 443 Peritoneal Dialysis (PD) – Intraperitoneal Additives and Antibiotics and SGH BR 732 Peritoneal Dialysis (PD) – Intraperitoneal Antibiotics Dosage, Duration, Compatibility And Stability

e) Leave antibiotics dwelling for 6 – 8 hours

6) If patient is showing signs of deterioration during the procedure

a) Escalate and manage patient as per SESLHDPR 679 Management of the Deteriorating ADULT inpatient (excluding maternity) and SGH CLIN718 Deteriorating Patient - Management Of The Adult Inpatient Over 16 Years, SGH CLIN301 Clinical Emergency Response Systems (CERS) Management and NSW Health PD2020_018 Recognition and management of patients who are deteriorating

b) All deterioration needs to be escalated by the after – hours medical officer to the on – call renal consultant

c) Inform the After Hours Nurse Manager and/or Bed Manager to advise that patient has deteriorated and requires admission

7) If patient remains well until the procedure is completed but PD fluid culture result revealed white cell count (WCC) greater than 100

a) Inform the afterhours RMO and renal consultant-on-call to commence inpatient treatment for peritonitis as per SGH CLIN442 Peritoneal Dialysis - Peritonitis Management and Treatment

b) Inform the After Hours Nurse Manager and/or Bed Manager to advise that patient has to commence peritonitis treatment and requires admission

c) Escalate and manage patient as per SESLHDPR 679 Management of the Deteriorating ADULT inpatient (excluding maternity) and SGH CLIN718 Deteriorating Patient - Management Of The Adult Inpatient Over 16 Years, SGH CLIN301 Clinical Emergency Response Systems (CERS) Management and NSW Health PD2020_018 Recognition and management of patients who are deteriorating

8) If patient remains well until procedure is completed and peritoneal dialysis culture WCC was less than 100:

a) Discharge patient with post procedure instruction to dwell IP antibiotics for 6 hours before connecting to APD or CAPD to drain out at home

b) Inform After Hours Nurse Manager and/or Bed Manager of discharge

9) Document procedure in eMR clinical notes and PD chart, and document vital signs using SAGO chart

10) Notify the PD unit via voicemail ext 33770/33775

5.5 FOLLOW-UP PROCESS BY THE PD NURSES POST PD CATHETER DECONTAMINATION

- Follow-up patient the next day and until required;
- Follow-up final PD fluid MCS result;
- Book a repeat PD fluid culture one week after the last antibiotic dose.

6. Cross References	NSW Health PD2020_018 Recognition and management of patients who are deteriorating NSW Health PD2022_032 Medication Handling NSW Health PD2024_006 High-Risk Medicines Management

	NSW Health PD2023_025 Infection Prevention and Control in Healthcare Settings NSW Health PD2020_049 Clinical and Related Waste Management for Health Services Australian Commission on Safety and Quality in Health Care *National Standard for User Applied labelling of Injectable Medicines, Fluids and Lines* *Australian Commission on Safety and Quality in Health Care National Standard for Medication Safety Standard* NHMRC *Australian Guidelines for the prevention and control of Infection in Healthcare* SESLHDPR 679 Management of the Deteriorating ADULT inpatient (excluding maternity) SGH-TSH BR 027 Aseptic Technique - Assessment and Education Requirements SGH BR 238 PD: After Hours Management of Outpatients for Unplanned PD Procedure (For Long And Short Stay) In 4 South St George Hospital (SGH) SGH BR 301 Clinical Emergency Response Systems (CERS) Management SGH BR 345 Peritoneal Dialysis - Inpatient Management SGH BR 442 Peritoneal Dialysis - Peritonitis Management and Treatment SGH BR 538 Peritoneal dialysis Catheter (PDC): Poor Flow/No Flow Management SGH BR 443 Peritoneal Dialysis (PD) – Intraperitoneal Additives and Antibiotics SGH BR 732 Peritoneal Dialysis (PD) – Intraperitoneal Antibiotics Dosage, Duration, Compatibility And Stability SGH BR 718 Deteriorating Patient - Management Of The Adult Inpatient Over 16 Years SGH BR 730 PD – Managing Unwell Outpatients in the PD Unit SGH Renal WPI 216 Automated Peritoneal Dialysis (APD) Connection And Disconnection Procedure – Claria Dialysis Machine Renal SGH WPI 217 Continuous Ambulatory Peritoneal Dialysis (CAPD) Freeline Solo Exchange Procedure SGH Renal PD WPI 144 Peritoneal Dialysis (PD) - Management of patients requiring intermittent peritoneal dialysis
7. Keywords	Peritoneal dialysis catheter, PD catheter contamination, PD catheter decontamination, Extension set contamination
8. BR Location	Under Peritoneal Dialysis SGH-TSH Business Rule Webpage
9. External References	1. Bender, F. H., Bernardini, J., & Piraino, B. (2006). Prevention of infectious complications in peritoneal dialysis: best demonstrated practices. *Kidney international. Supplement*, (103), S44–S54. https://doi.org/10.1038/sj.ki.5001915 2. Campbell, D. J., Johnson, D. W., Mudge, D. W., Gallagher, M. P., & Craig, J. C. (2014). Prevention of peritoneal dialysis-related infections. Nephrology Dialysis Transplantation. doi: 10.1093/ndt/gfu313

	3. Cheng, XBJ and Bargman, J. (2024). 1,3. Complications of Peritoneal Dialysis Part II: Nonmechanical Complications. Clinical Journal of the American Society of Nephrology ():10.2215/CJN.0000000000000418, January 8, 2024. | DOI: 10.2215/CJN.0000000000000418 4. Chow, K. M., Li, P. K., Cho, Y., Abu-Alfa, A., Bavanandan, S., Brown, E. A., Cullis, B., Edwards, D., Ethier, I., Hurst, H., Ito, Y., de Moraes, T. P., Morelle, J., Runnegar, N., Saxena, A., So, S. W., Tian, N., & Johnson, D. W. (2023). ISPD Catheter-related Infection Recommendations: 2023 Update. *Peritoneal dialysis international : journal of the International Society for Peritoneal Dialysis*, *43*(3), 201–219. https://doi.org/10.1177/08968608231172740 5. Crabtree JH, Shrestha BM, Chow K-M, and et al. (2019). Creating and Maintaining Optimal Peritoneal Dialysis Access in the Adult Patient: 2019 Update. *Peritoneal Dialysis International*; 39(5):414-436. 6. Li PK-T, Chow KM, Cho Y, et al. (2022). ISPD peritonitis guideline recommendations: 2022 update on prevention and treatment. *Peritoneal Dialysis International*; 42(2):110-153. doi:10.1177/08968608221080586 7. Ponce, D., Nitsch, D., & Ikizler, T. A. (2023). Strategies to Prevent Infections in Dialysis Patients. *Seminars in nephrology*, *43*(5), 151467. https://doi.org/10.1016/j.semnephrol.2023.151467 8. Saxena, A.B. (2023). Strategies to Avoid and Treat Peritoneal Dialysis Catheter Complications. In: Fadem, S.Z., Moura-Neto, J.A., Golper, T.A. (eds) Complications in Dialysis. Springer, Cham. https://doi.org/10.1007/978-3-031-44557-6_9
10. Consumer Advisory Group (CAG) Approval	Not Applicable
11. Aboriginal Health Impact Statement	The Aboriginal Health Impact Statement does not require completion because there is no direct or indirect impact on Aboriginal people. PD catheter and extension set decontamination process is similar for all population groups.
12. Implementation and Evaluation Plan	**Implementation:** The document will be published on the SGH-TSH business rule webpage and distributed via the monthly SGH-TSH CGD report. Accreditation and training programs; Inservice and Education sessions; Local Champions. **Evaluation:** IMS + Monitoring, Review of document after 3 years
13. Knowledge Evaluation	**Q1: When and why is PD catheter decontamination required??** *A1: PD catheter can occur at any time and decontamination must be performed immediately after a PD catheter contamination to prevent complications and to reduce the risk of peritonitis.* **Q2: What are the antibiotics used for PD catheter decontamination?** *A2: Combination of Vancomycin (2g) and Gentamicin (40mg) given intraperitoneally via 2 Litre CAPD with 6 – 8 hours dwell time. Plus antifungal prophylaxis of oral Nystatin for 7 days from last Vancomycin dose.* **Q3: Where is PD catheter decontamination procedure performed?** *A3: In the PD unit during PD unit's operating hours (Monday to Friday, 0730-1600) or in 4South after-hours (including public holiday and weekends).*

14. Who is Responsible	Director of St George and Sutherland Renal Service. Nursing Unit Manager, Dialysis Unit

Approval for: PD Catheter (and Extension Set) – Management Of Contamination (Decontamination)	
Specialty/Department Committee	Committee: Peritoneal Dialysis Committee Chairperson: Franziska Pettit, Staff Specialist Date: 25.06.2024
Specialty/Department Committee	Committee: Medication Documents Governance Committee Date: 12.08.2024
Nurse Manager / Divisional Director (SGH)	Lorena Matthews, Divisional Director, Medicine and Cancer Date: 03.07.2024
Medical Head of Department (SGH)	George Mangos, Department Head Renal Services Date: 20.06.2024
Safe Use of Medicines Committee (SGH)	Chairperson: A/Prof Winston Liauw Date: 26.08.2024
Executive Sponsor/s	Lorena Matthews, Divisional Director, Medicine and Cancer Date: 03.07.2024
Contributors to BR	**Contribution** (previous version) Anna Claire Cuesta, PD CNC **Contribution** (current revision) Anna Claire Cuesta, PD CNC
	Consultation: Franziska Pettit, Staff Specialist Jodie Bancroft, Nurse Manager, Leadership, Education and Development Team

Revision and Approval History

Revision Date	Revision number	Reason	Coordinator/Author	Revision Due
Jul 2016	0	New	Anna Claire Cuesta, PD CNC	Jul 2019
May 2019	1	Review	Anna Claire Cuesta, PD CNC	May 2022
Sep 2024	2	Major Review – addition of anti–fungal prophylaxis	Anna Claire Cuesta (PD CNC)	Sep 2027

General Manager's Ratification	
Angela Karooz (SGH)	Date: 29.10.2024